P:0.000). The odds of in-hospital mortality were lower in the group with morbid obesity (OR: 0.75, 95%CI: 0.57-0.97, P: 0.032), however, the odds of sepsis and mechanical ventilation were higher (OR:1.56, 95% CI: 1.38-1.76, P< 0.001 and OR:1.79, 95%CI: 1.54-2.08, P< 0.001 respectively).

Conclusion: Patients with morbid obesity who were admitted due to diverticular disease were younger, from lower quartiles of income and more from racial minorities. Morbid obesity was associated with higher odds of sepsis and mechanical ventilation; however, the mortality was lower. This may be explained by the younger age of the group.

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Messenger RNA SARS-CoV-2 Vaccines Affect the Gut Microbiome

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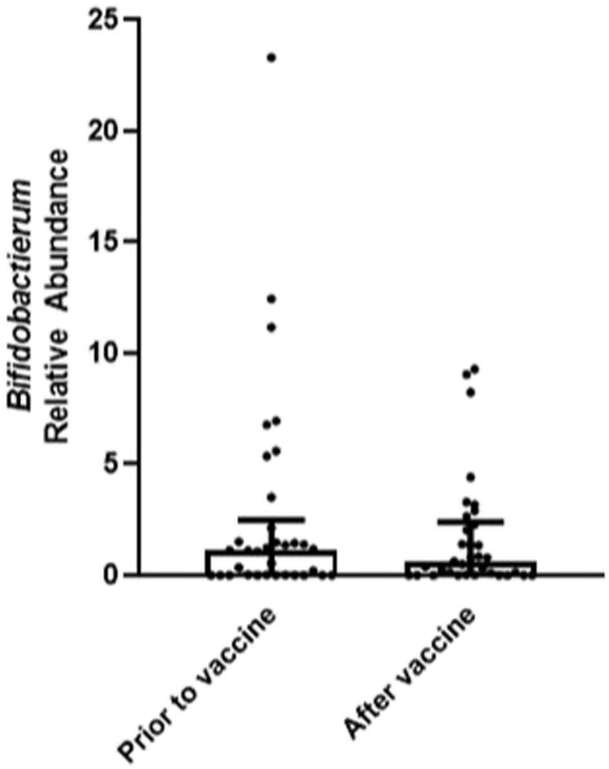
Introduction: Messenger RNA vaccines for preventing SARS-CoV-2 infection are widely used yet their effect on the gut microbiome is not known. Low *bifidobacteria* levels have been linked with severe SARS-CoV-2 infection, inflammatory bowel disease, *Clostridioides difficile* infection, obesity and aging. Preliminary case reports suggest fecal microbiota transplant could cure SARS-CoV-2 infection (1). A study by Bozkurt et al. showed that SARS-CoV-2 patients taking *bifidiobacteria*-containing probiotics had lower COVID-related hospitalization times (2).

Methods: 34 subjects had stool collection prior to vaccination and one month post vaccination to evaluate the relative abundance of *bifidobacteria* in the gut. DNA was extracted, library was prepped, and enrichment and sequencing were done using metagenomic next generation sequencing.

Results: Relative abundance of genus *bifidobacteria* significantly decreased to about half of original value after vaccination (P = 0.0065 via Wilcoxon signed rank test). Prior to vaccination, median (interquartile range) values of relative abundance for genus *bifidobacteria* were 1.13% (0.0016% to 2.52%) and after vaccination were 0.64% (0.0015% to 2.48%).

Conclusion: *Bifidobacteria*, included in the $1 billion industry of probiotics, has been shown to be critical in inflammatory diseases, severe COVID-19, obesity, and the aging process. Our results, although preliminary suggest that SARS COV-2 mRNA vaccine decreases levels of *bifidobacteria* (P = 0.0065). Future studies will be needed to characterize the time course of this decrease in *bifidobacteria* abundance, its impact on human health, and whether or not similar findings are seen with other vaccines (Figure).



[0227] **Figure 1.** Bifidobacterium relative abundance decreases (P = 0.0065) in subjects (n=34) after vaccination compared to before vaccination in the same subjects. Bars plot median; error bars plot interquartile range

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Multimodal Analysis of cfDNA Methylation Sequencing Improves Early Colon Cancer Detection

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Introduction: In recent years, alterations in cell free DNA (cfDNA) methylation patterns have gained wide acceptance as powerful biomarkers for early cancer detection. Here, we evaluate a Multimodal Epigenetic Sequencing Assay (MESA) for colon cancer detection that combines features derived from both cfDNA fragmentomics and cfDNA methylation to improve test performance. Our study indicates that MESA's combined approach fragmentomics to distinguish between colon cancer patients and healthy individuals.

Methods: Blood specimens drawn from 64 subjects diagnosed with colon cancer and 67 control subjects were processed by using the ECLIPSE platform. This platform consists of molecular techniques for cfDNA extraction, conversion, library generation and targeted next-generation DNA sequencing to generate high quality sequencing reads from genomic regions of interest. The ECLIPSE platform also allows for the evaluation of both cfDNA methylation patterns and fragmentation features by using a non-disruptive, enzymatic conversion step which minimizes degradation of cfDNA, unlike traditional bisulfite conversion methods. Custom bioinformatics pipelines and algorithms were used to process sequencing data, generate features and train models. Model performance was evaluated by using repeated 5-fold cross validation.

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